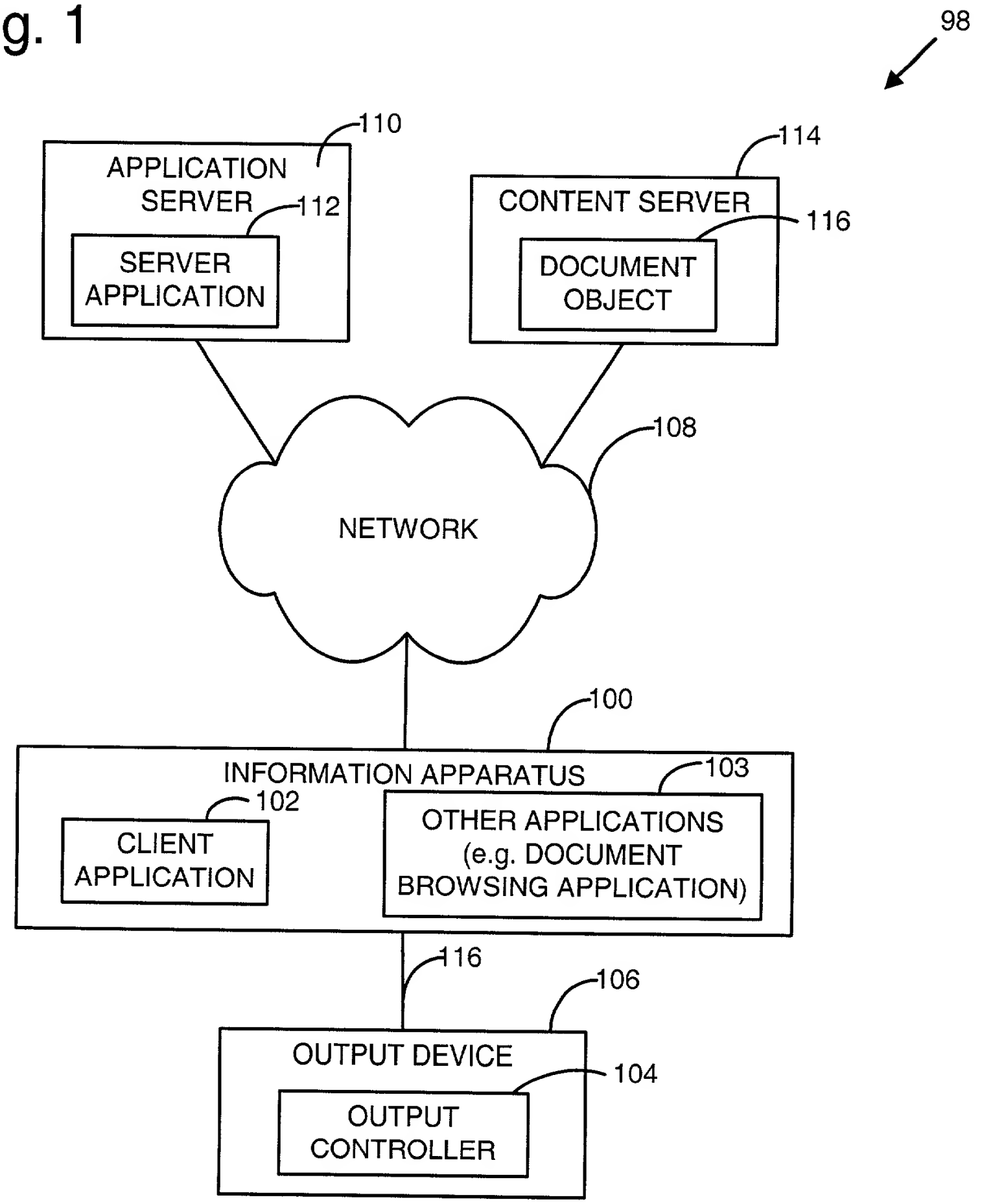
Fig. 1


98
110
APPLICATION SERVER
112
SERVER APPLICATION
114
CONTENT SERVER
116
DOCUMENT OBJECT
108
NETWORK
100
INFORMATION APPARATUS
103
102
CLIENT APPLICATION
OTHER APPLICATIONS (e.g. DOCUMENT BROWSING APPLICATION)
116
106
OUTPUT DEVICE
104
OUTPUT CONTROLLER

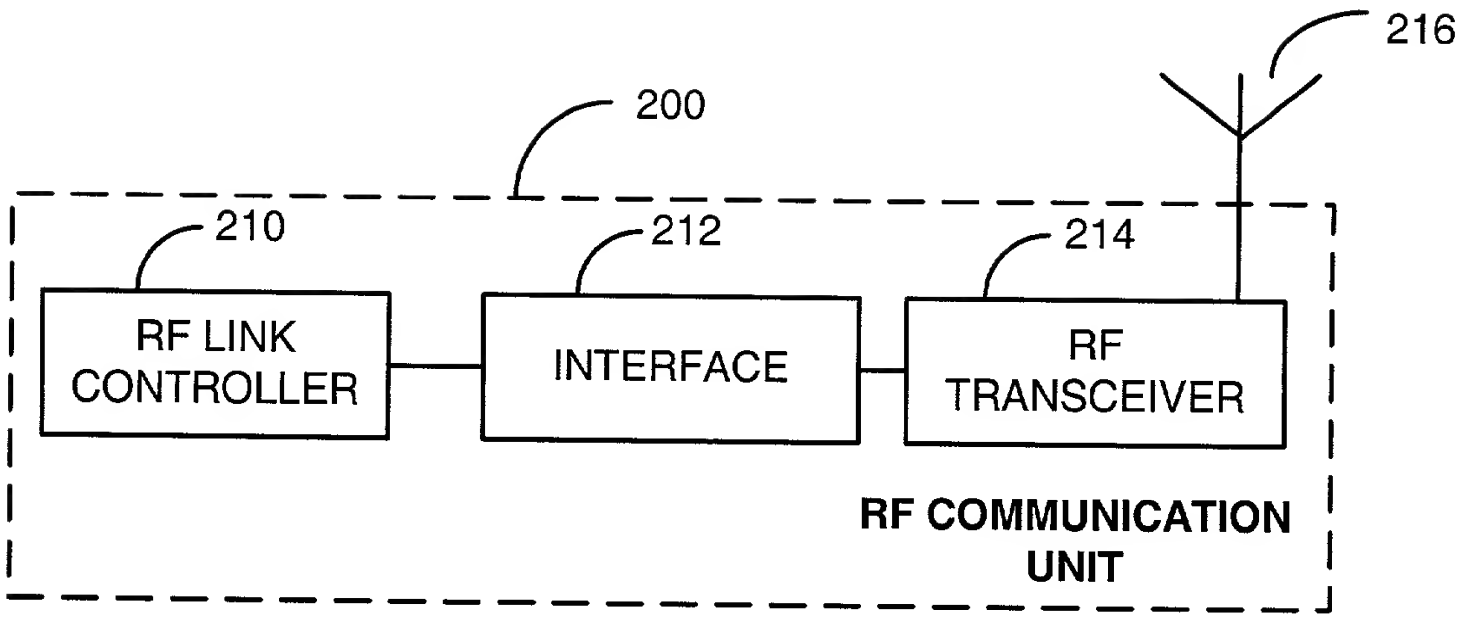

216
200
210
212
214
RF LINK CONTROLLER
INTERFACE
RF TRANSCEIVER
RF COMMUNICATION UNIT

Fig. 2A

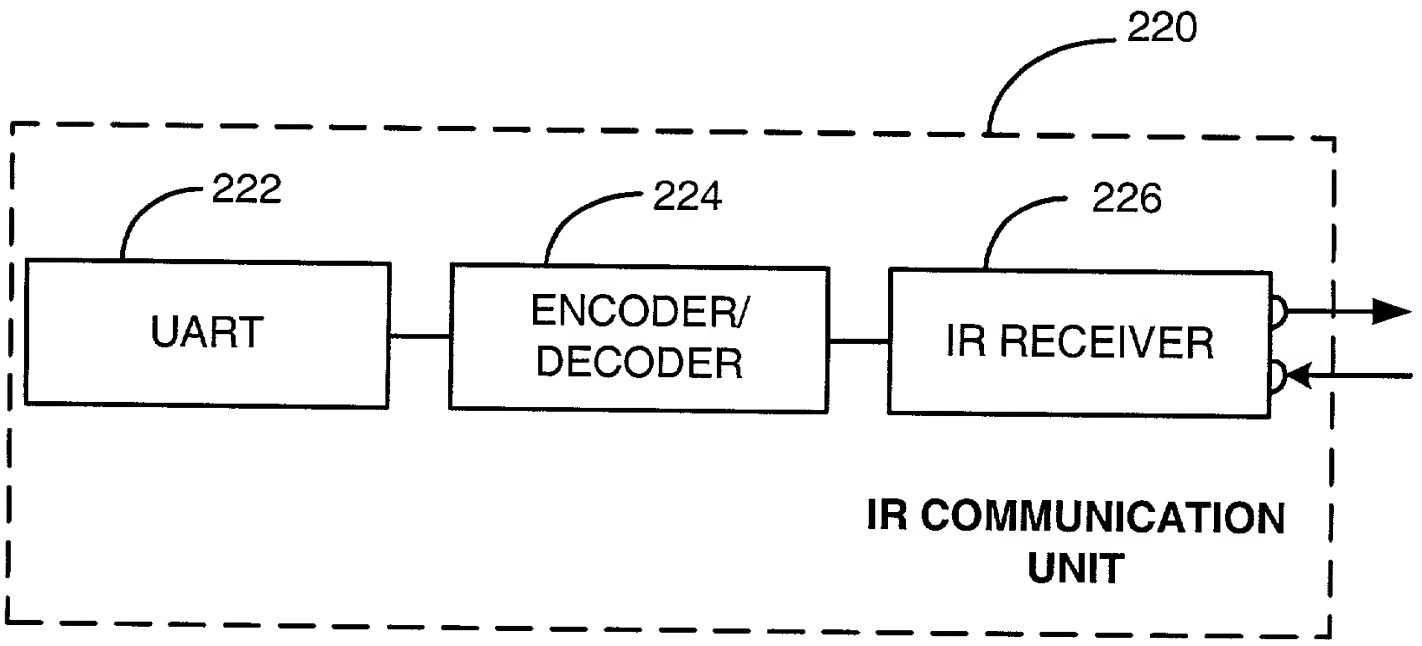

220
222
224
226
UART
ENCODER/ DECODER
IR RECEIVER
IR COMMUNICATION UNIT

Fig. 2B

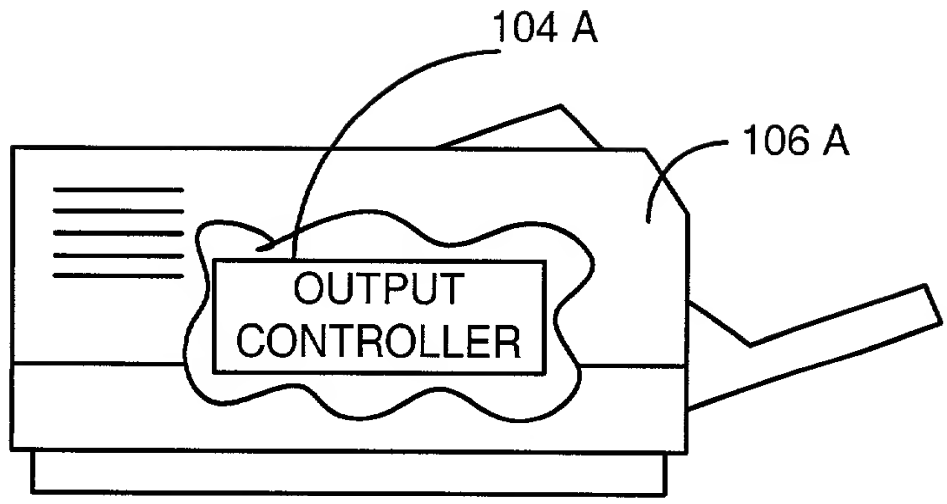


Fig. 3A

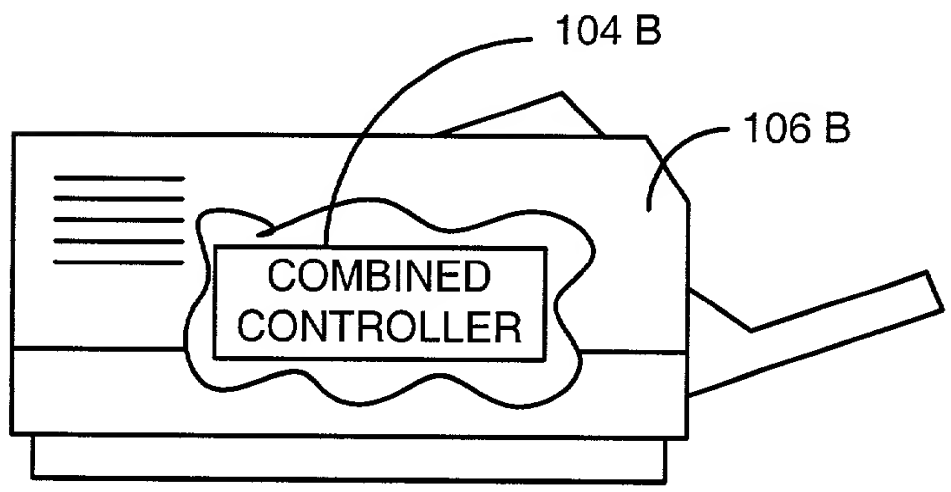


Fig. 3B

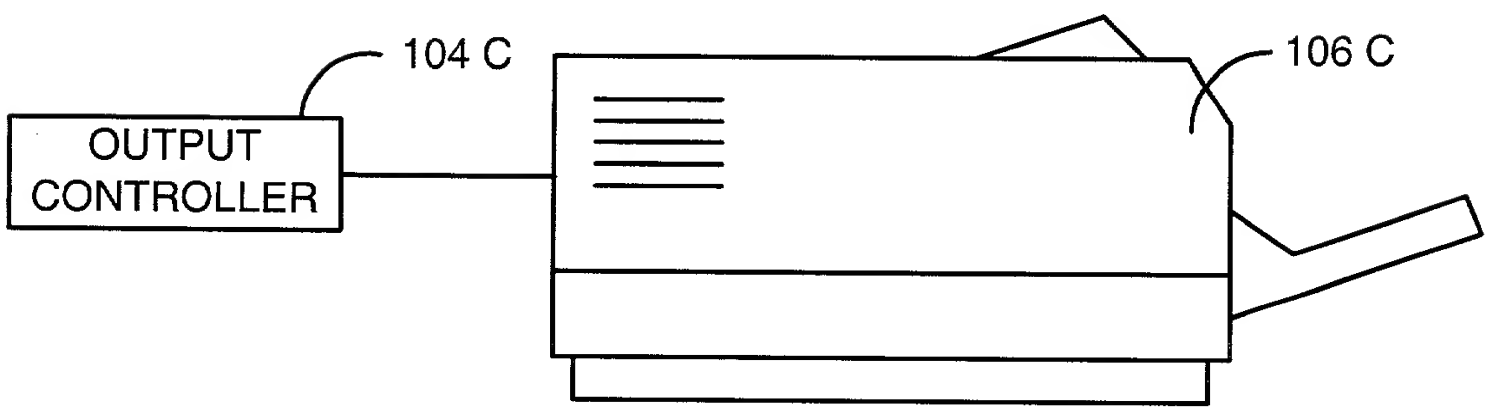


Fig. 3C

Fig. 4

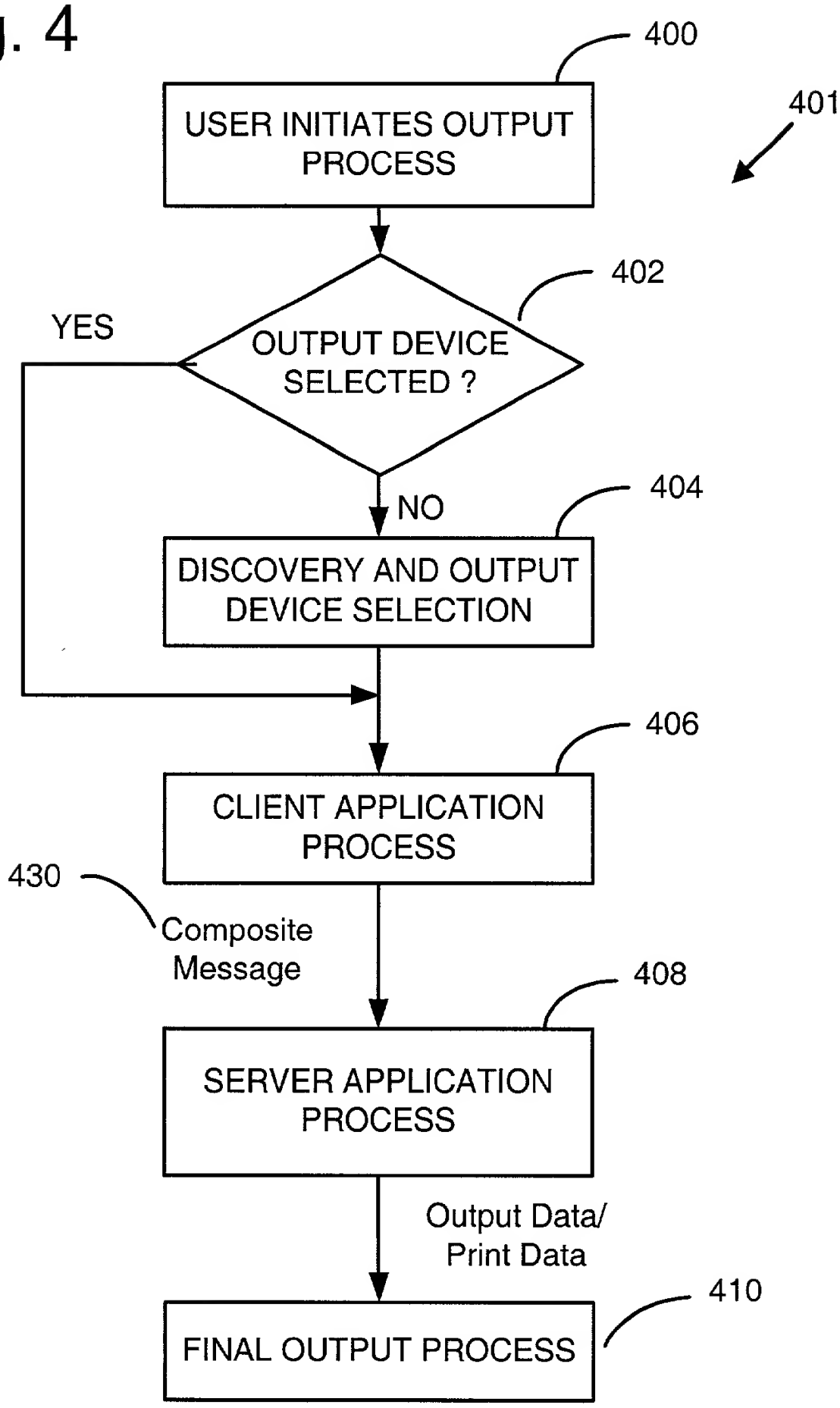

400
401
USER INITIATES OUTPUT PROCESS
402
YES
OUTPUT DEVICE SELECTED ?
NO
404
DISCOVERY AND OUTPUT DEVICE SELECTION
406
CLIENT APPLICATION PROCESS
430
Composite Message
408
SERVER APPLICATION PROCESS
Output Data/ Print Data
410
FINAL OUTPUT PROCESS

Fig. 5

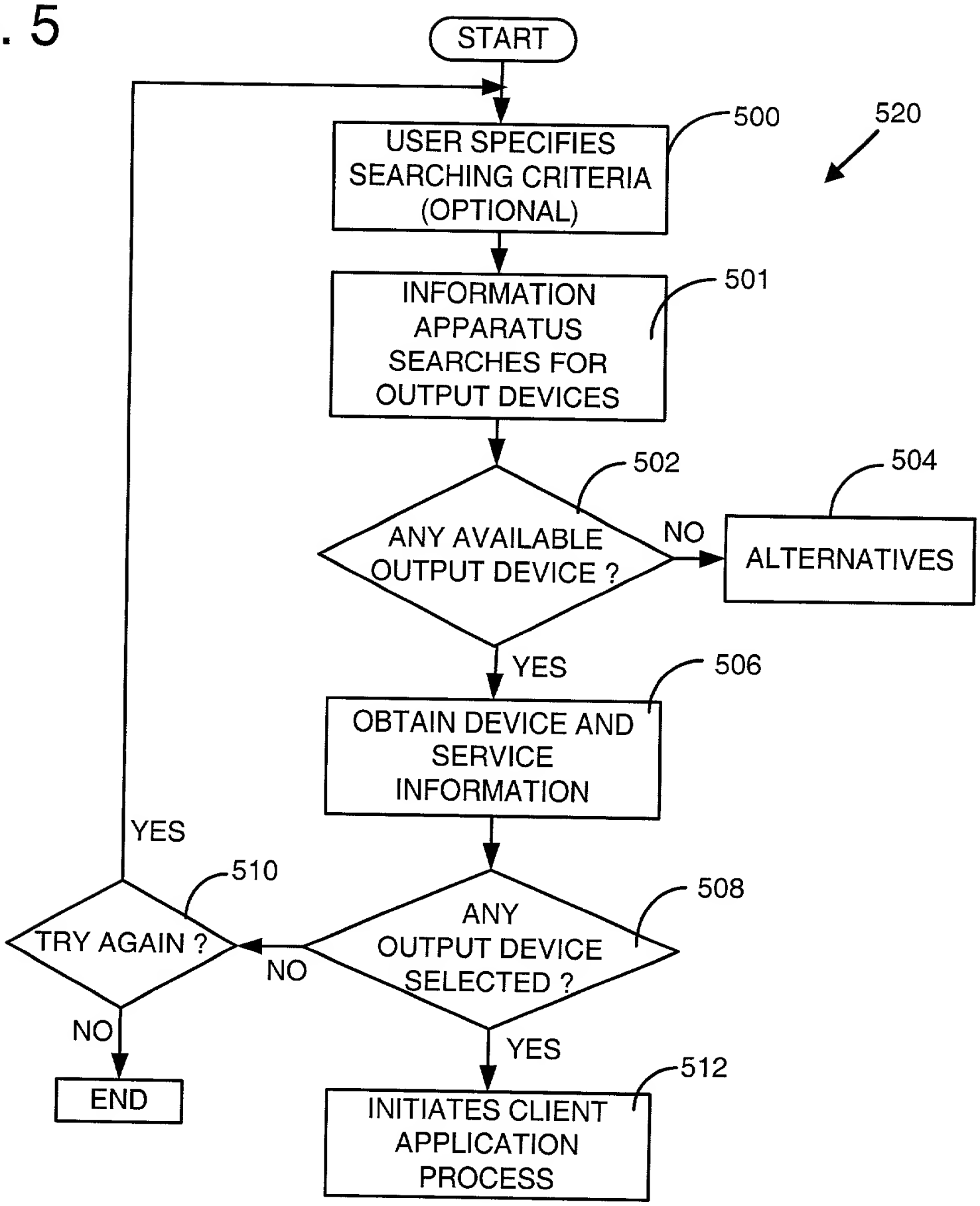

START
USER SPECIFIES SEARCHING CRITERIA (OPTIONAL)
500
520
INFORMATION APPARATUS SEARCHES FOR OUTPUT DEVICES
501
ANY AVAILABLE OUTPUT DEVICE ?
502
NO
ALTERNATIVES
504
YES
OBTAIN DEVICE AND SERVICE INFORMATION
506
ANY OUTPUT DEVICE SELECTED ?
508
NO
TRY AGAIN ?
510
YES
NO
END
YES
INITIATES CLIENT APPLICATION PROCESS
512

Fig. 6

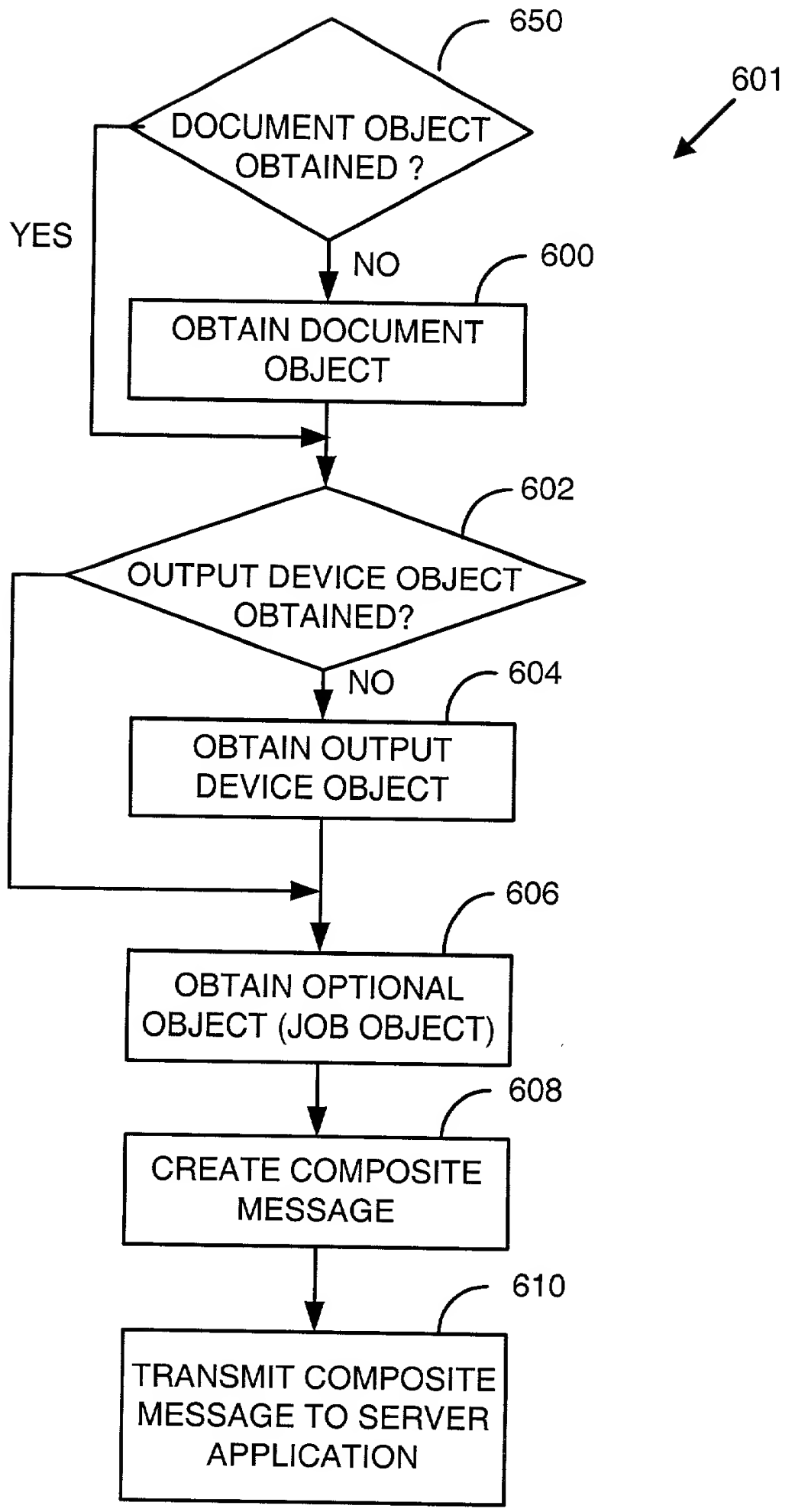

650
601
DOCUMENT OBJECT OBTAINED ?
YES
NO
600
OBTAIN DOCUMENT OBJECT
602
OUTPUT DEVICE OBJECT OBTAINED?
NO
604
YES
OBTAIN OUTPUT DEVICE OBJECT
606
OBTAIN OPTIONAL OBJECT (JOB OBJECT)
608
CREATE COMPOSITE MESSAGE
610
TRANSMIT COMPOSITE MESSAGE TO SERVER APPLICATION

Fig. 7

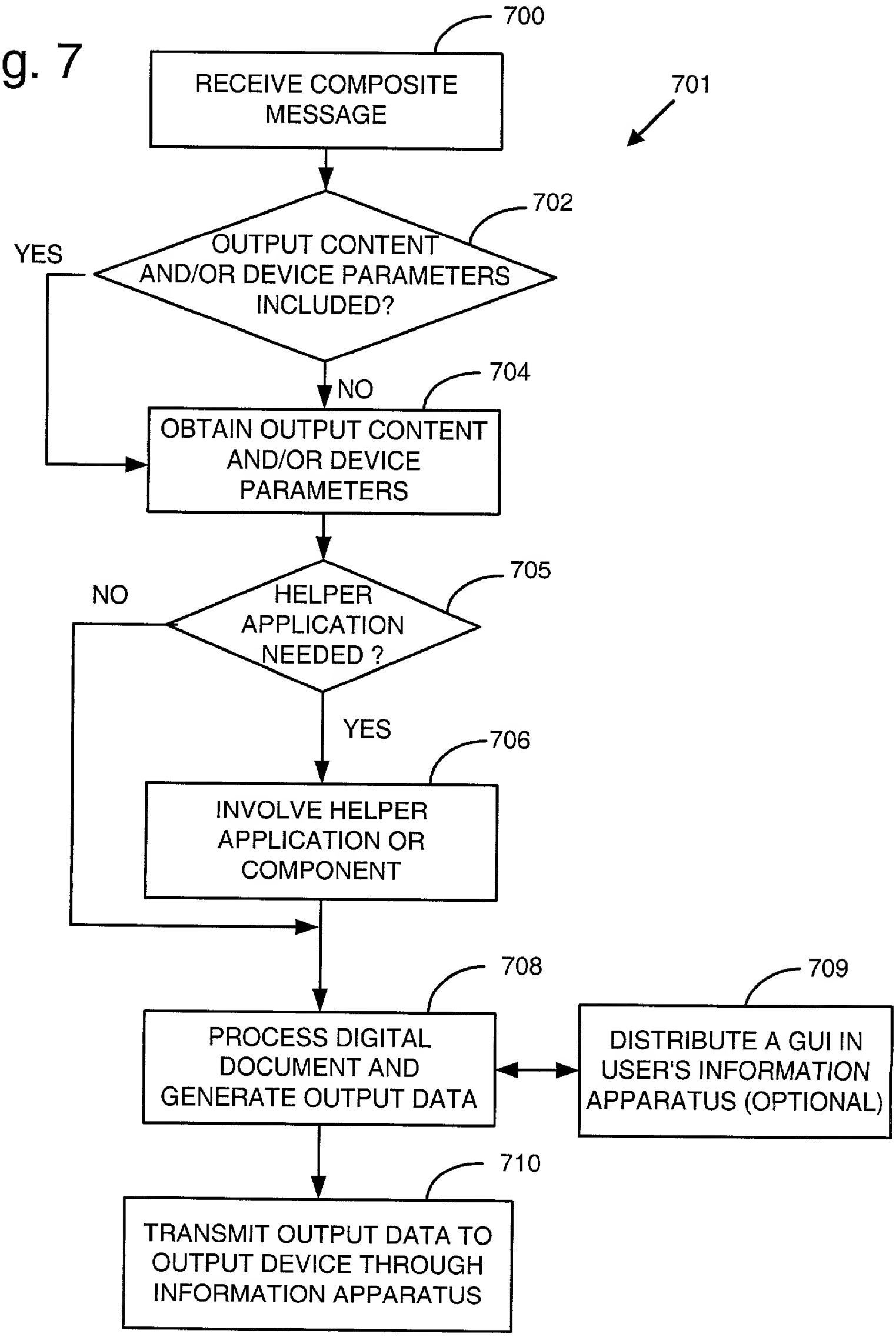
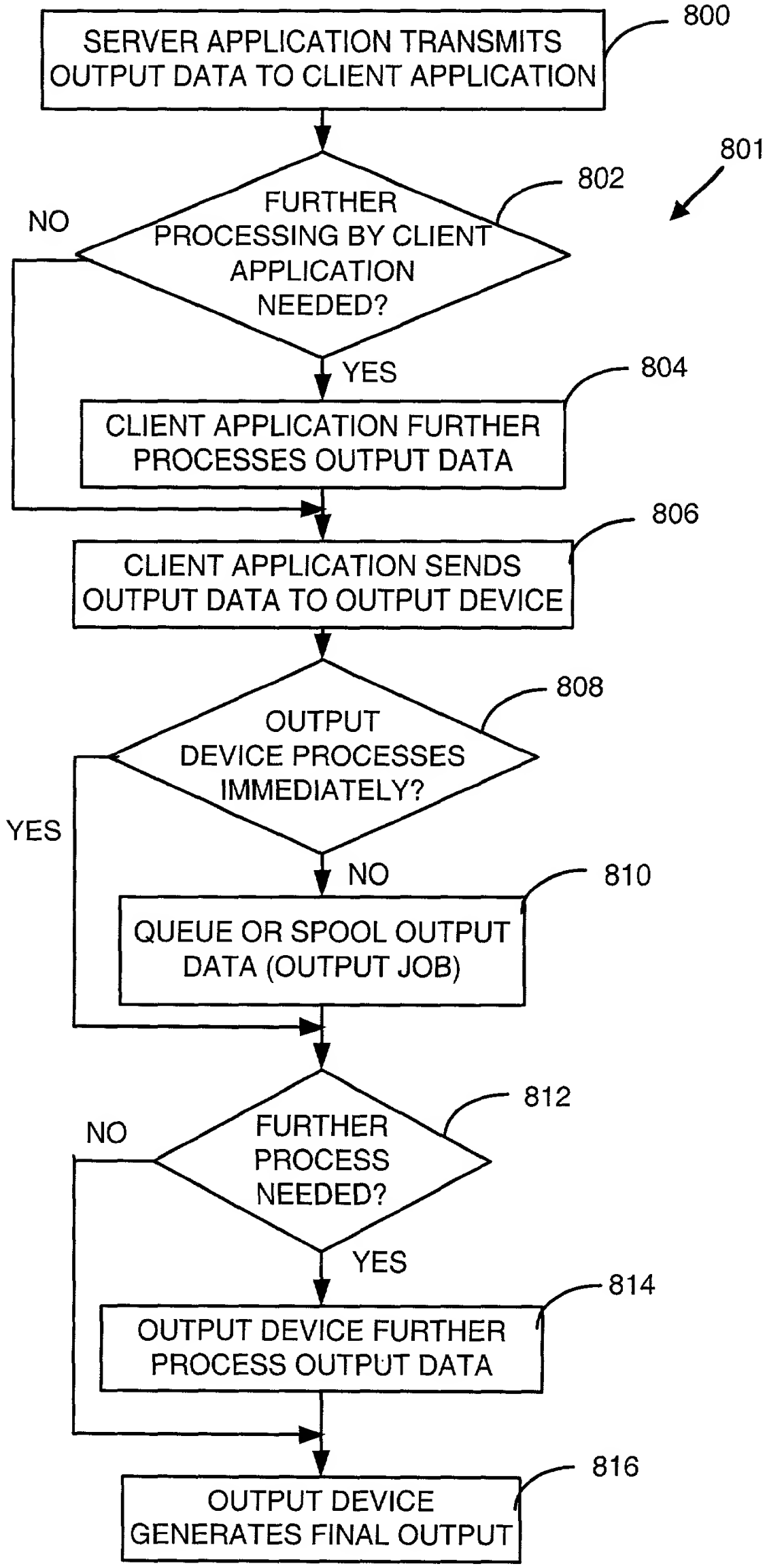

700
RECEIVE COMPOSITE MESSAGE
701
702
OUTPUT CONTENT AND/OR DEVICE PARAMETERS INCLUDED?
YES
NO
704
OBTAIN OUTPUT CONTENT AND/OR DEVICE PARAMETERS
705
HELPER APPLICATION NEEDED ?
NO
YES
706
INVOLVE HELPER APPLICATION OR COMPONENT
708
PROCESS DIGITAL DOCUMENT AND GENERATE OUTPUT DATA
709
DISTRIBUTE A GUI IN USER'S INFORMATION APPARATUS (OPTIONAL)
710
TRANSMIT OUTPUT DATA TO OUTPUT DEVICE THROUGH INFORMATION APPARATUS

Fig. 8


SERVER APPLICATION TRANSMITS OUTPUT DATA TO CLIENT APPLICATION
800
801
FURTHER PROCESSING BY CLIENT APPLICATION NEEDED?
802
NO
YES
CLIENT APPLICATION FURTHER PROCESSES OUTPUT DATA
804
CLIENT APPLICATION SENDS OUTPUT DATA TO OUTPUT DEVICE
806
OUTPUT DEVICE PROCESSES IMMEDIATELY?
808
YES
NO
QUEUE OR SPOOL OUTPUT DATA (OUTPUT JOB)
810
FURTHER PROCESS NEEDED?
812
NO
YES
OUTPUT DEVICE FURTHER PROCESS OUTPUT DATA
814
OUTPUT DEVICE GENERATES FINAL OUTPUT
816

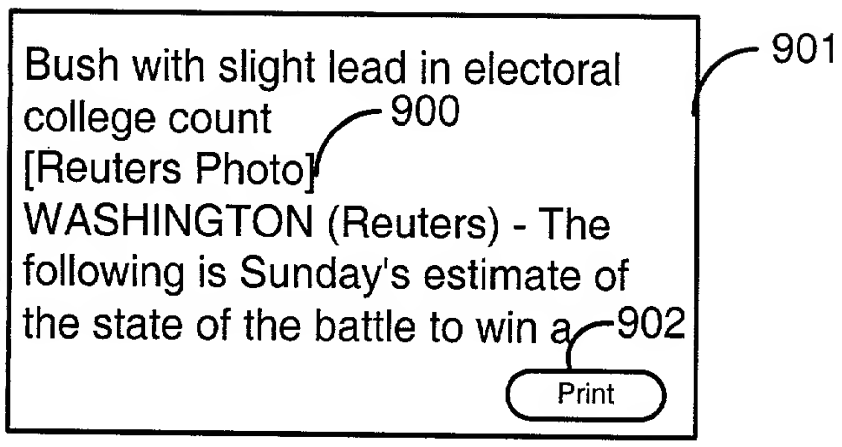


Fig. 9 A

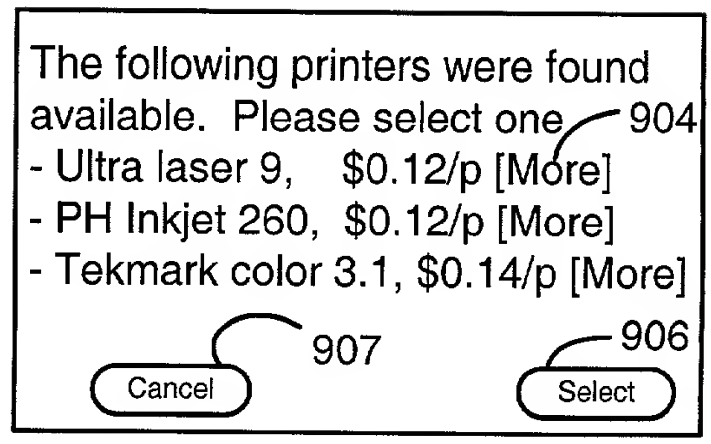


Fig. 9 B

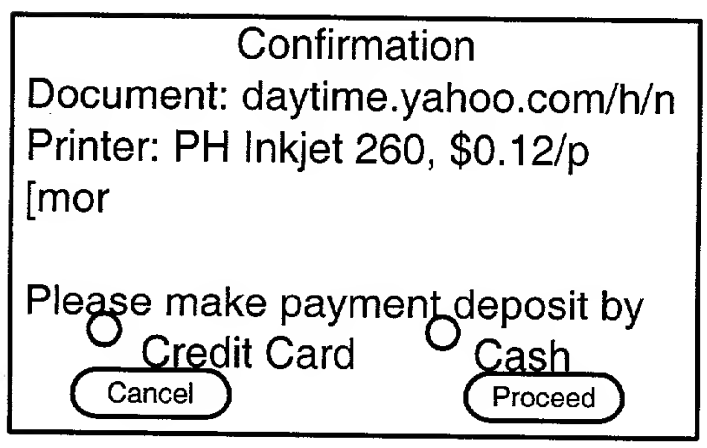


Fig. 9 C

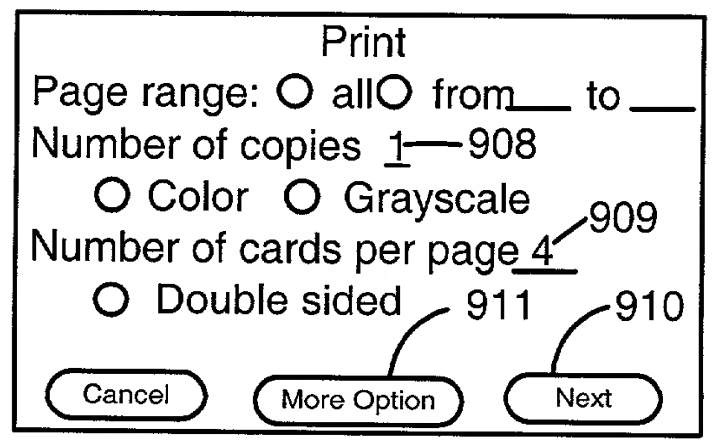


Fig. 9 D

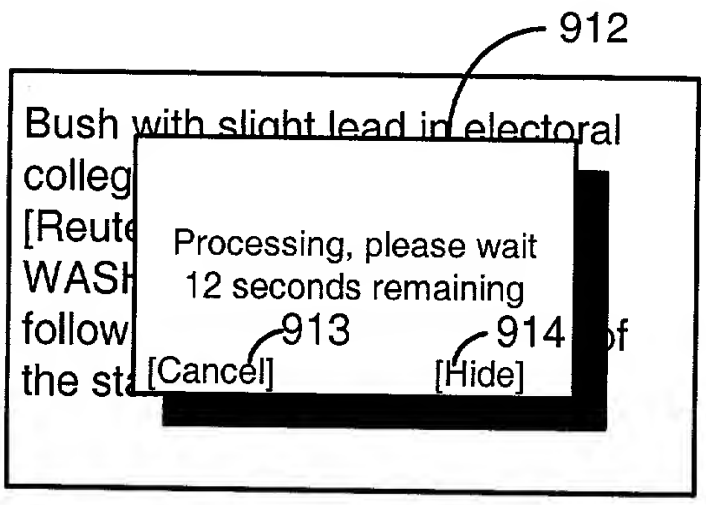


Fig. 9 E

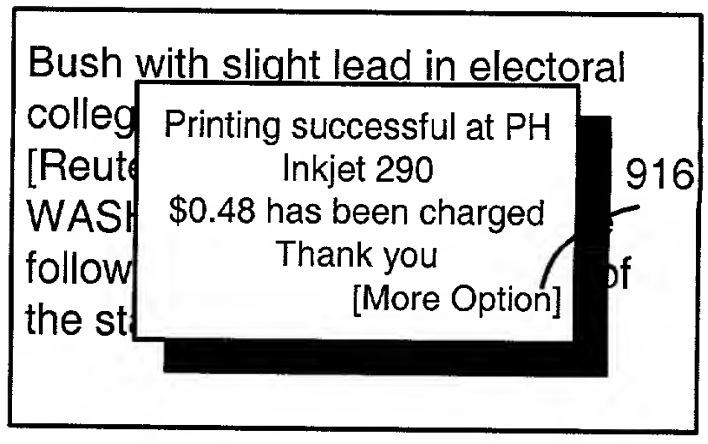


Fig. 9 F

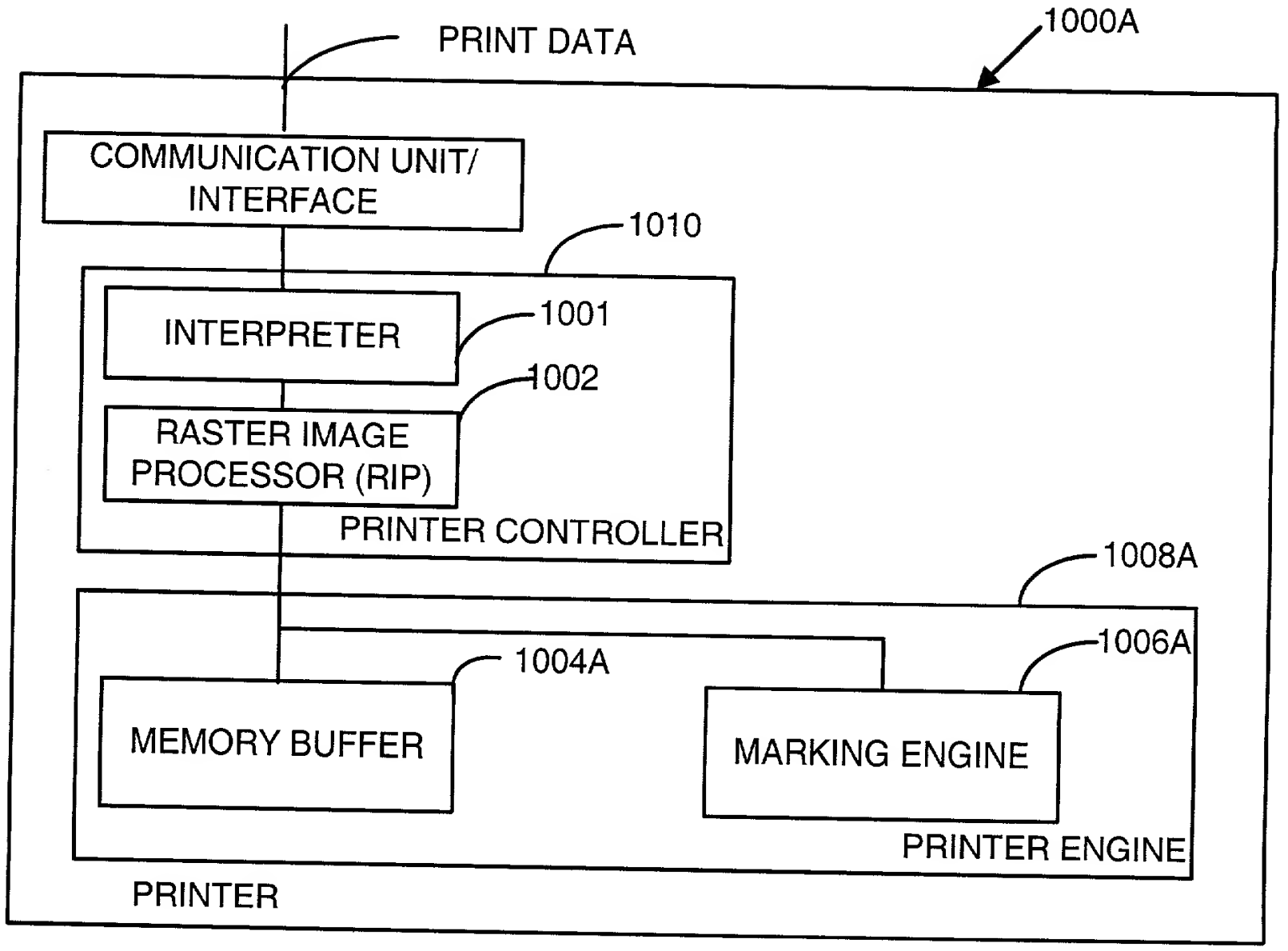


Fig. 10 A

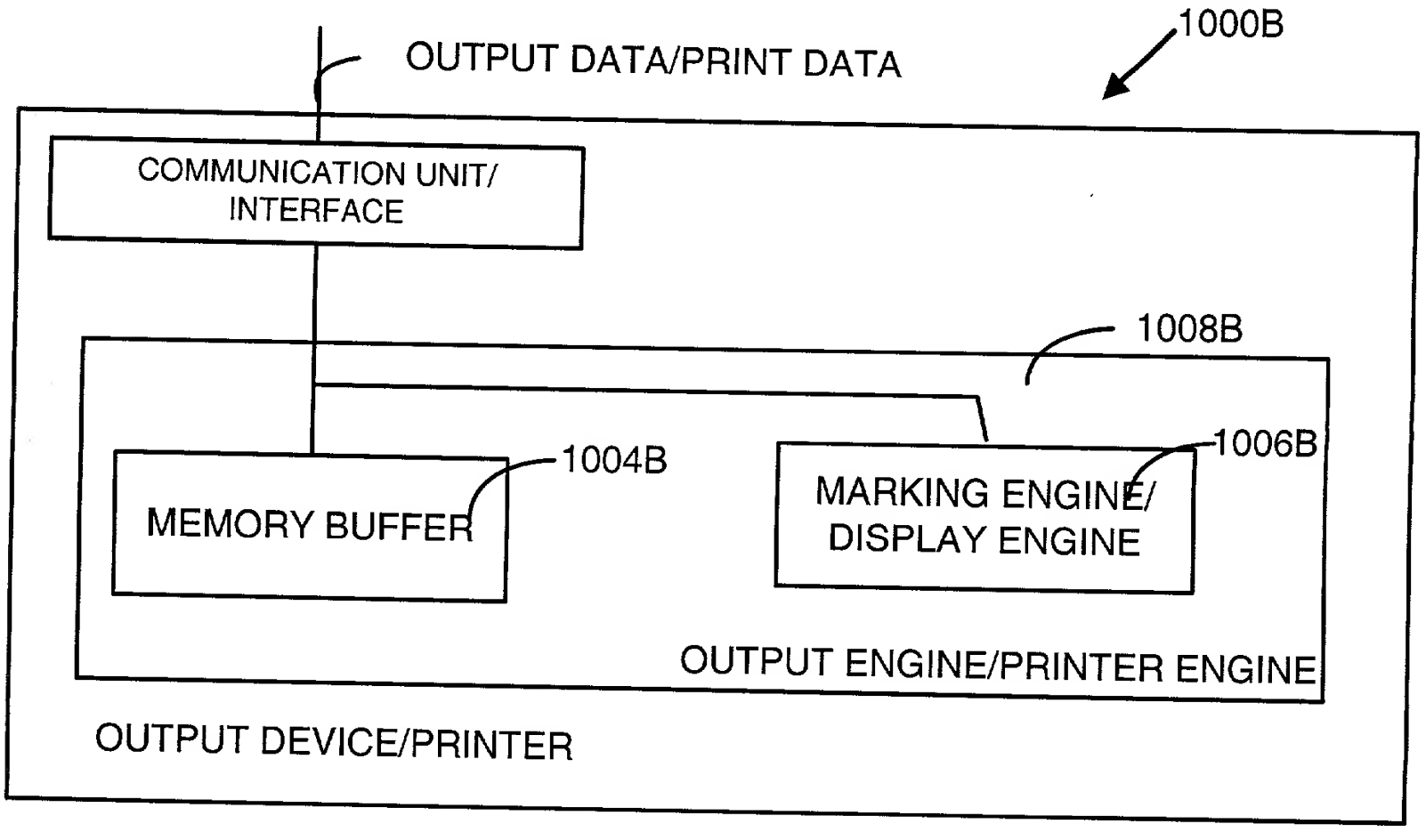


Fig. 10 B